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Citation for final published version:

Stokes, Elen ORCID: <https://orcid.org/0000-0002-0206-5241> 2016. Regulatory domain and regulatory dexterity: critiquing the UK governance of 'fracking'. Modern Law Review 79 (6) , pp. 961-986. 10.1111/1468-2230.12226 file

Publishers page: <http://dx.doi.org/10.1111/1468-2230.12226>
<<http://dx.doi.org/10.1111/1468-2230.12226>>

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Regulatory Domain and Regulatory Dexterity: Critiquing the UK Governance of ‘Fracking’

This article provides a critique of the UK Government’s regulatory response to ‘fracking’. It shows how Government has adopted two distinct schemas of regulation, which may usefully be classified under the headings ‘regulatory domain’ and ‘regulatory dexterity’. These schemas rely on very different interpretive conventions and are in many ways contradictory. Yet, Government uses both ‘domain’ and ‘dexterity’ arguments simultaneously in order to advance its policy in favour of fracking. The article explains how two seemingly different regulatory approaches work together towards the same policy goal, and highlights the role of law in facilitating technological development.

Introduction

The purpose of this article is to examine the United Kingdom (UK) Government’s handling of the topical and divisive matter of the regulation of ‘fracking’. Fracking (shorthand for ‘hydraulic fracturing’) is a controversial drilling technique used to extract previously inaccessible fossil fuels. Reports suggest that the UK has significant onshore resources of shale gas,¹ which are now easier to exploit by employing fracking and which offer the possibility of a cheaper, cleaner, and more secure energy supply. As a result, moves are afoot to increase the rate and scale at which fracking takes place. This has met with strong public opposition,² but current Government policy (and that

¹ Department of Energy and Climate Change (DECC), *The Unconventional Hydrocarbon Resources of Britain’s Onshore Basins – Shale Gas* (DECC 2013).

² ‘How Summer Fracking Protest Unfolded in Sussex Village’ (BBC News, 17 April 2014) <http://www.bbc.co.uk/news/uk-england-sussex-26765926> accessed 30 June 2016; W. Jordan, ‘Public Opposition to Fracking Grows’ (*YouGov*, 19 May 2015) <https://yougov.co.uk/news/2015/05/19/opposition-fracking-britain-grows/> accessed 30 June 2016; J. Halliday, ‘Protesters Urge North Yorkshire Councillors to Vote Against Fracking’ *The Guardian* (London, 23 May 2016).

of the previous Conservative-led coalition Government) is decidedly in favour of developing the UK's shale gas industry.

In pursuit of this policy, Government has adopted two distinct strategies or 'schemas' of regulation, which the article conceptualises as 'regulatory domain' and 'regulatory dexterity'. 'Domain' and 'dexterity' provide alternative vantage points from which to view regulation and make use of distinct sets of interpretive conventions. They adopt different scales of analysis (abstract/concrete); rely on different characterisations of technology (analogous/dissimilar); locate regulation differently in space (multilevel/national) and time (continuity/change); focus on different aspects of regulation (broad coverage/specific inadequacies); and lead to different regulatory responses (defending against reform/introducing new tailor-made legislation). Government simultaneously invokes both schemas, even though they seemingly contradict each other.

These contradictions are examined in detail. An approach based on 'regulatory domain' involves analysing regulation in the abstract. It entails taking a synoptic view of the regulatory landscape, looking at regulation as a whole rather than the individual parts of it. Government maps the general regulatory regimes applicable to fracking, providing a simplified illustration of the great expanse of legal provision. Because fracking is treated as analogous to conventional drilling technologies, it is said to fall within the remit of existing regulations on the protection of health and the environment. These are areas of shared competence between the European Union (EU) and Member States, and so fracking is subject to regulation at multiple levels. Government is satisfied that together EU and UK regulations cover fracking, and that, because the regulations

are high in number and broad in scope, they can be regarded as adequate.³ Consequently, Government has rejected proposals for new legislation on the basis that the UK already has ‘the most robust regulatory regime in the world for shale gas’.⁴ With the emphasis on the continuity of existing legislation, the UK has defended against reform for fear that additional rules for fracking would stifle technological development and industrial growth. Describing the Government’s position, former Minister of State for Energy, Michael Fallon, stated: ‘we are absolutely opposed to further regulation in this particular area’.⁵

Contrast this with what I term ‘regulatory dexterity’, which involves the reverse. Unlike ‘domain’-type responses which defensively demarcate areas already covered by regulation, ‘dexterity’ is prompted by concerns over the lack of specific legislation and the corresponding need for reform. It prioritises the need to act quickly and with precision in adapting to changing technological circumstances. Rather than viewing regulation in the abstract, ‘dexterity’ has a narrower focus on concrete legal rules. In this case, Government singles out rules governing finance, planning permission, and access to land. Within the confines of these rules, shale gas activities are seen not as analogous to, but as dissimilar from, conventional fossil fuel extraction. This opens up the possibility of fracking-specific regulation. Finance, planning permission, and physical access, to the extent that they relate to the choice of energy provision, are areas of Member State competence in which the EU has no power to act – and so they involve the exercise of national jurisdiction. Here, instead of giving blanket assurances of broad regulatory coverage, Government looks to specific problems of regulatory inadequacy and stresses the urgent need for regulatory change. This has resulted in, inter alia, the introduction of new legislation, including

³ This article was written before the EU referendum. The irony that the UK Government sees EU regulations as foundational in this context does not go unnoticed.

⁴ DECC, ‘Shale Gas Health Review by Public Health England’ (31 October 2013) <https://www.gov.uk/government/news/shale-gas-health-review-by-public-health-england> accessed 13 November 2015. See also HC Deb 16 September 2015, vol 599, cols 35-37WS.

⁵ Economic Affairs Committee, *The Economic Impact on UK Energy Policy of Shale Gas and Oil: Oral and Written Evidence* (HL 2013-14, 172) 163.

measures to ensure that shale gas projects benefit from a streamlined planning permission process, generous tax breaks, and an automatic right of underground access. The object, of course, is to attract investment in and stimulate the development of the UK's fracking industry.

The article goes on to show that, although 'regulatory domain' and 'regulatory dexterity' are in many ways inconsistent (abstract/concrete, analogous/dissimilar, multilevel/national, continuity/change etc), they also sustain each other through their opposing forms.⁶ However much they appear to be contradictory, 'domain' and 'dexterity' work in close and strategic alliance. Both operate to the same end – the promotion of fracking – by resisting the imposition of technology-restricting legislative burdens (in defence of the 'regulatory domain') and by legislating to facilitate technological development (through the exercise of 'regulatory dexterity'). This means that the regulation of fracking is at any moment both fixed ('domain') and flexible ('dexterity'), both general and specific, both rooted in the past and pointing towards a particular technological future. Far from being a weakness, these multiple images of regulation shield it from criticism by giving Government considerable scope in interpreting the regulatory rules in ways that are conducive to increased shale gas production. Arguments that law is too slow to respond to fracking are countered with examples of fast-acting regulatory dexterity; conversely, criticisms that new legislation has been rushed through are answered by recalling the stability of the regulatory domain. It is not just that 'domain' and 'dexterity' present two opposing conceptions of regulation; it is that they are simultaneously and reciprocally used to achieve the same policy objective. They contradict *and* they cohere. This interaction merits further consideration.

Policy Agenda

⁶ On the contradictory attributes of law, see P. Fitzpatrick, *The Mythology of Modern Law* (Routledge 1992); Patricia Ewick and Susan S. Silbey, *The Common Place of Law: Stories from Everyday Life* (University of Chicago Press 1998).

This section outlines the complexities and uncertainties involved in regulating fracking. Such issues are not unique to this case but are commonly encountered in any major technological development.⁷ Fracking, however, offers a particularly vivid and current example of how complex and contested understandings of technology are translated into material regulatory form. Later the article presents two such modes of translation ('regulatory domain' and 'regulatory dexterity'), each of which uses different blends of reasoning and discourse. The purpose now is to show how the many claims and controversies surrounding fracking have yielded, counter-intuitively perhaps, an unambiguous Government policy in favour of the technology and of the large-scale production of shale gas.

Shale gas is a natural gas trapped in shale rock deep underground. It is described as 'unconventional' because it was previously too difficult or uneconomic to extract, but recent advances in drilling technology, especially fracking, have made this more feasible. Fracking works by injecting large volumes of fluid (water containing sand and additive chemicals) at high pressure into shale rock to create tiny fractures, allowing the gas to escape and be collected. A well is drilled vertically and, on reaching the shale, is directed horizontally for up to several kilometres along the shale bed.⁸ One advantage over other types of drilling is that multiple horizontal wells can be 'fracked' from a single vertical bore, allowing gas to be drawn from a wide area around the site while minimising the number of well pads needed at the surface.

Other benefits are said to include the provision of a cheaper, cleaner, and more secure energy supply. First, Government maintains that the extraction of 'home-grown' shale gas will protect the UK market from global price shocks and interruptions to supply from politically

⁷ eg S. Jasanoff, 'Technologies of Humility' (2007) 450(7166) *Nature* 33; B. Wynne, *Rationality and Ritual: Participation and Exclusion in Nuclear Decision-Making* (2nd edn, Earthscan 2011); Nuffield Council on Bioethics, *Emerging Biotechnologies: Technology, Choice and the Public Good* (Nuffield Council on Bioethics 2012).

⁸ For explanation, see M. Stephenson, *Shale Gas and Fracking: The Science Behind the Controversy* (Elsevier 2015) ch 3.

unstable parts of the world.⁹ Secondly, it believes that an increase in domestic gas supplies will benefit ‘the whole of society’¹⁰ by providing ‘revenues, growth and jobs – and, of course, affordable bills’.¹¹ Much has been made of how the development of a UK fracking industry will result in lower gas prices, as it has done in the US, and bring down energy costs for consumers.¹² Thirdly, so long as it replaces coal, shale gas is expected to help the UK to achieve a significant reduction in greenhouse gas emissions, as required by law.¹³ Because gas-fired power generation emits less carbon dioxide (CO₂) and methane than traditional coal-fired power plants,¹⁴ shale gas is described as a ‘bridging fuel’¹⁵ to a greener energy future – at least until other energy sources (eg renewables, nuclear power) become more widely available. Understandably, Government welcomes the prospect of a more consumer-friendly, resilient, and sustainable energy system, which is why shale gas production is described as an ‘urgent national priority’.¹⁶

The supposed benefits of shale gas are not, however, universally accepted or known for certain. Critics have pointed out that UK shale gas production may not have the desired market impact.¹⁷ This is because production costs in the UK are expected to be high, which will have to be factored into the price at which the gas is sold, and also because the UK may remain part of an integrated European gas market, meaning that any cost benefits from its shale gas development will be diluted.¹⁸ The dysfunctional nature of the UK energy market, on which the ‘big six’ energy

⁹ DECC, *Single Departmental Plan 2015 to 2020* (DECC 2016) pt 1.1.

¹⁰ Edward Davey, ‘The Myths and Realities of Shale Gas Exploration’ (9 September 2013) <https://www.gov.uk/government/speeches/the-myths-and-realities-of-shale-gas-exploration> accessed 3 September 2015.

¹¹ *ibid.* See also HC Deb 29 January 2014, col 862.

¹² Economic Affairs Committee, *The Economic Impact on UK Energy Policy of Shale Gas and Oil* (HL 2013-14, 172) ch 3.

¹³ Climate Change Act 2008, s 1(1); Energy Act 2013, s 57.

¹⁴ D.J.C. MacKay and T.J. Stone, *Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use* (DECC 2013) 28.

¹⁵ DECC, *Shale Gas Made Simple* (DECC 2014) 1.

¹⁶ Economic Affairs Committee, *Economic Impact on UK Energy Policy of Shale Gas* (n 12) para 258.

¹⁷ Energy and Climate Change Committee, *Shale Gas* (HC 2010-12, 795-I) 27; P. Stevens, *Shale Gas in the United Kingdom* (Chatham House 2013) 5; C. Huhne, ‘The Truth about David Cameron’s Fracking Fairytale’ *The Guardian* (London, 26 January 2014).

¹⁸ Economic Affairs Committee, *Oral and Written Evidence* (n 5) 149.

providers have a stranglehold, further means that, even with a plentiful supply of domestic shale gas, a reduction in consumer prices is by no means guaranteed.¹⁹ Additionally, it is argued that the effect of shale gas production on total UK emissions is likely to be small.²⁰ It is even suggested that global emissions of greenhouse gases could *increase* if the fossil fuels displaced by shale gas (eg coal or liquefied gas) are exported and burnt elsewhere.²¹ The issue is that '[t]he climate does not care where the CO₂ comes from, whether it is from gas, from coal, from the UK or from China'.²²

As well as having potentially long-term impacts on the climate, fracking also poses immediate and localised risks which are of significant public concern. These include risks of groundwater contamination caused by the leakage of fracking fluids; surface spills of fuel or waste water; local air pollution from the on-site flaring of gas; increased traffic movement, noise, and dust; damage to neighbouring property from seismic activity; disturbance to natural habitats caused by construction and drilling; and visual intrusion into the local landscape by buildings and drilling rigs.²³ Yet, there is considerable uncertainty as to the nature and scale of possible harms, which is attributed to the very limited amount of fracking to have taken place in the UK and a corresponding lack of data. It is noted that, because only a few wells have been drilled (and only one has been 'fracked'), there is 'a risk that the data they reveal may not be representative'.²⁴ Consequently it is too soon to draw firm conclusions about the extent of the UK's shale gas resources or their recoverability, making it difficult to assess the seriousness of the risks or the value of the benefits.

¹⁹ Office of Fair Trading, Ofgem and Competition and Markets Authority, *State of the Market Assessment* (Ofgem 2014) 43-44.

²⁰ MacKay and Stone (n 14) 33.

²¹ *ibid* 33-35.

²² Energy and Climate Change Committee (n 17) Q75 (Professor Kevin Anderson).

²³ DECC, *Fracking UK Shale: Planning Permission and Communities* (DECC 2014) 4.

²⁴ British Geological Survey/DECC, *The Carboniferous Bowland Shale Gas Study: Geology and Resource Estimation* (DECC 2013) 6.

Uncertainties also flow from the ‘non-technical’ aspects of fracking, and there are unanswered questions of a more fundamental kind, regarding public attitudes towards shale gas and the UK’s energy mix generally. Standard opinion surveys can be poor gauges of the range and complexity of public perception, as ‘people bring more to their understanding of “risk” than conventional technical approaches imply’.²⁵ Attitudes depend on a range of factors such as cultural conditioning,²⁶ social and political values, and levels of trust in decision-making individuals and institutions.²⁷ For example, a public dialogue exercise found that participants with negative views of fracking were also those who felt that ‘the government had already taken a position on shale gas and oil at a national level if not locally’ and that ‘exploration would most likely go ahead regardless of public opposition’.²⁸ These additional layers of doubt have received little Government attention, except where they are seen as potential barriers to shale gas development – in which case they are viewed as temporary, practical inconveniences (‘when people start to see the benefit ... they will see that it is quite right that this is part of our long-term economic plan’²⁹) rather than more persistent and deep-seated issues requiring serious consideration. As far as policy goes, they are ‘non-issues’.³⁰

Thus, although it raises a variety of different concerns, fracking is presented as a problem of unknown but *knowable* risks. This places great emphasis on the need to proceed with fracking in order to close knowledge gaps and enable the more precise calculation likely outcomes. Here,

²⁵ B. Wynne, C. Waterton and R. Grove-White, *Public Perceptions and the Nuclear Industry in West Cumbria* (Lancaster University 2007) 4.

²⁶ See generally M. Douglas and A. Wildavsky, *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* (University of California Press 1992).

²⁷ B. Wynne, ‘Misunderstood Misunderstanding: Social Identities and Public Uptake of Science’ (1992) 1(3) *Public Understanding of Science* 281, 295-297.

²⁸ Taylor Nelson Sofres, *Public Engagement with Shale and Oil: A Report on Findings from Public Dialogue Workshops* (Taylor Nelson Sofres 2014) 14-15.

²⁹ ‘David Cameron: Shale Gas Projects Will Benefit Communities Financially’ (*The Telegraph*, 13 January 2014) <http://www.telegraph.co.uk/news/earth/energy/fracking/10568623/David-Cameron-shale-gas-projects-will-benefit-communities-financially.html> accessed 30 June 2016.

³⁰ See eg M.A. Crenson, *The Un-Politics of Air Pollution: A Study of Non-Decisionmaking in the Cities* (John Hopkins Press 1971).

uncertainty has considerable functional value in policy formation, involving what is described elsewhere as the ‘instrumental use of technical doubt’.³¹ Instead of propping up arguments against such development (as one might expect, in light of other policy encounters with ‘the precautionary principle’³²), technical uncertainty becomes the *reason* for pressing ahead. The question becomes ‘when’ not ‘if’ fracking will happen – as indeed David Cameron explained: ‘we’re going all out for shale’.³³

Clear Policy, Fractured Regulation

The policy in this area leaves a great many issues unresolved, but it is unmistakably clear in its meaning and intent. This is reflected in various Government initiatives and institutional arrangements, all designed to support shale gas development and fracking. There is no space to discuss them in detail, but a handful of examples should illustrate the point. The Department for Communities and Local Government (DCLG), for instance, has published guidance on how fracking sites should proceed through the local planning process,³⁴ and pledged financial assistance to local planning authorities dealing with shale gas applications.³⁵ In his 2013 Budget speech, the Chancellor, George Osborne, announced a new fiscal regime for shale gas operators, as well as a benefits scheme for communities hosting shale gas projects.³⁶ This will be overseen by the recently established Office of Unconventional Gas and Oil, which sits within the Department of Energy and Climate Change (DECC) and which is generally responsible for encouraging the recovery of

³¹ M. Bloor et al, ‘The Instrumental Use of Technical Doubts: Technological Controversies, Investment Decisions and Air Pollution Controls in the Global Shipping Industry’ (2014) 41(2) *Science and Public Policy* 234.

³² Friends of the Earth Cymru, *Planning and Unconventional Oil and Gas Fighting Off Fracking in Cymru/Wales* (Friends of the Earth Cymru 2014).

³³ Prime Minister’s Office, ‘Local Councils to Receive Millions in Business Rates from Shale Gas Developments’ (13 January 2014) <https://www.gov.uk/government/news/local-councils-to-receive-millions-in-business-rates-from-shale-gas-developments> accessed 30 June 2016.

³⁴ Department for Communities and Local Government (DCLG), *Planning Practice Guidance for Onshore Oil and Gas* (DCLG 2013).

³⁵ DCLG, *Shale Exploration – Support for Mineral Planning Authorities* (DCLG 2015).

³⁶ HM Treasury, *Budget 2013* (HC 2012-13, 1033) 4.

the UK's unconventional oil and gas reserves.³⁷ Together these policy-institutionalised responses give the impression of coherence (even if their rationale remains contentious) and create a single narrative about the need to pursue fracking.³⁸

But whereas fracking emerges from the policy discourse as a unitary 'thing' – a singularly good 'thing' – its regulation involves multiple, sometimes conflicting, frames of meaning.³⁹ A close look at the regulatory rules and their application reveals several points of divergence, owing to Government's simultaneous use of different styles of reasoning and interpretation.⁴⁰ These can be grouped into two main schemas: first, 'regulatory domain', which combines interpretive strategies of abstraction, analogy, coverage, continuity, and resistance to reform; and secondly, 'regulatory dexterity', which lays emphasis on concreteness, dissimilarity, inadequacy, change, and new legislation. The remainder of the article examines the origins and influence of this fracturing (for want of a better word!) of regulatory approach.

Regulatory Domain

Regulation in the Abstract

In his book *Seeing Like a State*, James C. Scott examines various state attempts to make society orderly and legible by 'seeing' human activity through 'simplified approximations of documents and statistics'.⁴¹ Such 'simplification' requires the state to take 'an aggregate, synoptic view of ...

³⁷ HM Government, 'Office of Unconventional Gas and Oil (OUGO)' <https://www.gov.uk/government/groups/office-of-unconventional-gas-and-oil-ougo> accessed 26 July 2015.

³⁸ See generally J. Pinch and W.E. Bijker, 'The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other' (1984) 14(3) *Social Studies of Science* 399.

³⁹ S. Jasanoff, *Science and Public Reason* (Earthscan 2012) 43. See also C. Hilson, 'Framing Fracking: Which Frames Are Heard in English Planning and Environmental Policy and Practice?' (2015) 27(2) *Journal of Environmental Law* 177.

⁴⁰ On 'discursive variability and rhetorical maneuvering', see Ewick and Silbey (n 6) 51. See also O.W. Pedersen, 'The Rhetoric of Environmental Reasoning and Responses as Applied to Fracking' (2015) 27(2) *Journal of Environmental Law* 325.

⁴¹ J.C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (Yale University Press 1998) 76.

reality'⁴² so that facts 'lose their particularity and reappear in schematic or simplified form'.⁴³ Scott considers this a necessary part of modern statecraft and describes how the 'view from above' results in 'abridged maps' of legibility, which do not accurately represent the activity of society but rather represent 'only that slice of it that interested the official observer'.⁴⁴ Although Scott does not engage directly with formal state regulation, his conceptualisation of the disciplining of knowledge under the government's gaze offers a useful way of thinking about UK regulatory responses to fracking. I am interested here in how knowledge about regulation in the context of fracking has been 'mapped', recounted, and generalised. Taking inspiration from Scott's work, I develop the notion of the 'regulatory domain'.

A good place to start is with DECC's *Regulatory Roadmap* for onshore oil and gas exploration, which quite literally gives a visual representation of order – in this case regulatory order – in the form of a flow chart. The *Roadmap* is aimed at current and prospective operators of unconventional oil and gas sites, especially shale gas sites, and it presents a step by step guide to compliance with the relevant regulatory requirements. DECC describes it as 'a first point of reference for anyone seeking to understand the permitting and permissions process' and as providing 'a basic, indicative overview of the process, highlighting key pieces of legislation and regulation, and identifying required actions and best practices and various stages'.⁴⁵ The neatly arranged and colour-coordinated chart illustrates the main regulatory phases, in order of application: (i) regulations overseen by central government; (ii) the planning process; (iii) the environmental process; and (iv) regulations within the remit of other public bodies. This schematic illustration makes the regulation more understandable (akin to what Scott describes as 'projects of

⁴² *ibid* 11.

⁴³ *ibid* 81.

⁴⁴ *ibid* 3.

⁴⁵ DECC, *Onshore Oil and Gas Exploration in the UK: Regulation and Best Practice* <https://www.gov.uk/government/publications/regulatory-roadmap-onshore-oil-and-gas-exploration-in-the-uk-regulation-and-best-practice> accessed 11 August 2015.

legibility⁴⁶) and it also, inevitably, invites generalisations about the regulatory regime as a whole. Indeed, the totalising image of fracking regulation conveys completeness and control, even though it does not reflect the finer points of law in this area – after all, it would defeat the purpose of the *Regulatory Roadmap* to detail every aspect of the regulation. As Scott reminds us, a map is designed to abstract and summarise. In fact, the completeness of a map, he says, ‘depends, in a curious way, on its abstract sketchiness, its *lack* of detail – its thinness’.⁴⁷

The visual representation of regulation in abstract form is one way in which the regulatory domain is set out, but there are additional interpretive techniques – or ‘knowledge moves’⁴⁸ – used by Government in arguing that existing legislation applies to fracking. They are as follows.

Regulation by Analogy

Government’s claim that fracking is subject to robust regulation depends, at least in part, on its depiction of fracking as analogous to ‘conventional’ methods of oil and gas extraction. It sees fracking as new, but not so new that additional regulatory provision is required. ‘Newness’ is at the core of technological innovation but, with a few notable exceptions,⁴⁹ its significance for regulation is rarely mentioned. The general literature on technology distinguishes between two broad types of innovation: ‘incremental’ and ‘radical’. The former is characterised by a ‘natural trajectory’⁵⁰ of successive improvements on existing products or processes, while the latter involves ‘breakthrough’ technologies that are transformational in terms of their attributes or

⁴⁶ Scott (n 40) 80.

⁴⁷ *ibid* 44, my emphasis. See also C.M. Rose, *Property and Persuasion: Essays on the History, Theory and Rhetoric of Ownership* (Westview Press 1994) 278.

⁴⁸ M. Valverde, ‘Theoretical and Methodological Issues in the Study of Legal Knowledge Practices’, in A. Sarat, L. Douglas and M.M. Umphrey (eds) *How Law Knows* (Stanford University Press 2007) ch 3, 83.

⁴⁹ See eg D.D. Friedman, ‘Does Technology Require New Law?’ (2001) 25(1) *Harvard Journal of Law & Public Policy* 71; J. Black, M. Lodge and M. Thatcher (eds) *Regulatory Innovation: A Comparative Analysis* (Edward Elgar 2005) ch 1; M. Lee, *EU Regulation of GMOs: Law and Decision Making for a New Technology* (Edward Elgar 2008) esp 72-73; C. Ford, ‘Innovation-Framing Regulation’ (2013) 649(1) *Annals of the American Academy of Political and Social Sciences* 76.

⁵⁰ R.R. Nelson and S.G. Winter, ‘In Search of a Useful Theory of Innovation’ (1977) 6 *Research Policy* 36, 57.

effects or both.⁵¹ Of course, in defining a particular innovation, much depends on who is doing the classifying and in what context, because development that is groundbreaking to engineers may be unremarkable as far as policymakers are concerned, and vice versa.⁵² In policymaking, the perception of a technology as ‘radically’ or ‘incrementally’ innovative will inevitably shape the way in which responses are formed. In the case of fracking, even though the terms ‘radical’ or ‘incremental’ are not used, its perceived novelty (or familiarity) is crucial to determining the regulatory response.

Government contends that because fracking is broadly comparable to what has gone before, it can be regulated under existing legislative regimes. One basis for comparison is the technological process. In this context, fracking is regarded as the latest variation on long-established drilling techniques; it is represented not as a revolutionary change but as a minor increment in technological innovation that hardly needs to be considered separately for the purpose of regulation.⁵³ For example, the Environment Agency (the principal environmental regulator in England) describes fracking as ‘an established technology’,⁵⁴ and Government is at pains to emphasise that fracking has already been used in the UK (albeit offshore rather than on land).⁵⁵ The analogy is also pursued in relation to risk. Government argues that the categories of risk associated with fracking are not unique and apply to any one of a number of techniques used to exploit fossil fuel reserves – the implication being that regulators are already equipped to deal with them. Government puts considerable importance on the fact that the UK has a ‘strong track

⁵¹ R. Garcia and R. Calantone, ‘A Critical Look at Technological Innovation Typology and Innovativeness Terminology: A Literature Review’ (2002) 19 *Journal of Product Innovation Management* 110, 113.

⁵² W.J. Abernathy and K.B. Clark ‘Innovation: Mapping the Winds of Creative Destruction’ (1985) 14(1) *Research Policy* 3, 4.

⁵³ cf S. Jasanoff, ‘In the Democracies of DNA: Ontological Uncertainty and Political Order in Three States’ (2005) 24(2) *New Genetics and Society* 139, 139.

⁵⁴ Environment Agency site has been archived but is cited in E. White et al, *Briefing Paper: Shale Gas and Fracking* (Paper No. SN06073, House of Commons Library 2015) 25.

⁵⁵ Edward Davey (n 10).

record’⁵⁶ and ‘over 50 years of experience of regulating the onshore oil and gas industry nationally’.⁵⁷ And since the techniques used in fracking for shale gas are ‘broadly similar to those used in existing onshore gas and oil extraction methods’, it follows that fracking ‘will be covered by the same robust safety and environmental regulatory regime’.⁵⁸

Broad, Multilevel Regulatory Coverage

Government claims that existing regulatory measures cover fracking despite not having been designed for such purpose. In doing so, it makes four types of argument. The first relates to the quantity of applicable measures. Fracking cannot be described as unregulated as it comes within the scope of a large number of legislative regimes on public health, workplace safety, and the environment. These are areas of shared competence between the EU and Member States,⁵⁹ resulting in a complex of interrelated rules and procedures across different regulatory areas and jurisdictional levels. Decisions concerning national energy provision remain the prerogative of Member States,⁶⁰ which is why the UK has been able unilaterally to enact legislation governing the exploration and production of fossil fuels.⁶¹ On top of this, numerous measures of EU legislation (36 according to one estimate⁶²) are relevant to the health and environmental aspects of fracking, even though they contain no mention of either ‘fracking’ or ‘shale gas’. Government is keen to point out that all drilling operations, whether or not they involve fracking, ‘must comply with a comprehensive set of health and safety regulations’.⁶³

⁵⁶ DECC, ‘Press Release: New Onshore Licensing Round Opens’ (28 July 2014) <https://www.gov.uk/government/news/new-onshore-licensing-round-opens> accessed 1 July 2016.

⁵⁷ DECC, *Developing Onshore Shale Gas and Oil – Facts about ‘Fracking’* (DECC 2013) 8.

⁵⁸ DECC, *Fracking UK Shale* (n 23) 2.

⁵⁹ Treaty on the Functioning of the European Union [2012] OJ C326/47 (TFEU), arts 2(2) and 4(2)(i).

⁶⁰ *ibid* art 194(2).

⁶¹ eg Petroleum Act 1998.

⁶² European Parliament Directorate-General for Internal Policies, *Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health*, IP/A/ENVI/ST/2011-07 (2011) 10.

⁶³ DECC, *Fracking UK Shale: Water* (DECC 2014) 3.

The second argument concerns the definitional breadth of the relevant regulations. It is important that the regulations are of general application, in that they do not address a particular technology or distinguish between different fossil fuels. For instance, a prospective operator must apply for and obtain a Petroleum Exploration and Development Licence from DECC before it can search for and extract ‘petroleum’.⁶⁴ The definition of ‘petroleum’ is clearly wide enough to encompass shale gas as it includes ‘*any* mineral oil or relative hydrocarbon and natural gas existing in its natural condition in strata’.⁶⁵ A further example can be found in planning law. Before carrying out ‘development’, the operator requires planning permission from the minerals planning authority (a unit of the local authority). Since ‘development’ is defined as including ‘mining or other operations in, on, over or under land’,⁶⁶ it is sufficiently broad to cover fracking – and because no distinction is drawn between the various kinds of ‘mining or other operations’, the requirement of planning permission is taken to apply to fracking as it does to any other method of drilling.⁶⁷

To give the planning authority a more detailed account of the likely environmental effects, the operator may be required to complete an Environmental Impact Assessment (EIA) of the proposed development before planning permission will be granted. For some types of development under the EIA Directive⁶⁸ an EIA is mandatory (Annex I projects), whereas for

⁶⁴ Petroleum Act 1998, ss 1(a) and 3(1). In Northern Ireland, licences are issued by the Northern Ireland Department of Enterprise, Trade and Investment. Licensing for onshore oil and gas is now devolved to Scotland (Scotland Act 2016, s 47) and is due to be devolved to Wales (Wales HC Bill (2016-17) cl 23).

⁶⁵ Petroleum Act 1998, s 1(a), my emphasis; Petroleum Licensing (Exploration and Production) (Landward Areas) Regulations 2014, sch 2, cls 24 and 29. ‘Model clauses’ are incorporated into all PEDLs no matter the type of petroleum exploration or development (except in very limited circumstances, eg sch 2, cl 24(3)).

⁶⁶ Town and Country Planning Act 1990 ss 55(1) and 57(1); Town and Country Planning (Scotland) Act 1997, ss 26(1) and 28(1); The Planning (Northern Ireland) Order 1991, ss 11(1) and 12.

⁶⁷ DCLG, *National Planning Policy Framework* (DCLG 2012) para 147; Scottish Government, *Scottish Planning Policy* (Scottish Government 2014) para 240; National Assembly for Wales, *Minerals Planning Policy Wales* (National Assembly for Wales 2000) para 64; no equivalent in Northern Ireland’s Planning Policy Statements. The Scottish and Welsh Governments have since announced moratoria on the granting of planning consents for unconventional oil and gas developments. See eg the Town and Country Planning (Notification) (Unconventional Oil and Gas) (Wales) Direction 2015.

⁶⁸ Environmental Impact Assessment (EIA) Directive (EU) 2011/92 [2012] OJ L26/1, transposed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011; Town and Country Planning

others the planning authority must first determine whether the proposed development is likely to have significant environmental effects, bearing in mind the development's nature, size, and location (Annex II projects).⁶⁹ Neither of the Annexes makes reference to 'fracking', but they do list broad categories of activity into which fracking could fall. Annex I, for example, includes the category 'extraction of petroleum and natural gas for commercial purposes',⁷⁰ and Annex II lists projects in the 'extractive industry', including those involving 'deep drilling' – which can reasonably be regarded as covering fracking, even though the categories do not say so. It is because of their definitional breadth that fracking is assumed to come within their purview; hence there is no question of shortcomings or gaps in the law.

The third argument is that existing regulations cover the entire life cycle of fracking operations. General planning policy, for example, dictates that planning permission is required not just for the full-scale production of onshore oil and gas but also for the initial exploration and appraisal phases of development.⁷¹ Planning policy is overlaid by legislation addressing a range of concerns from the design and construction of wells,⁷² to the flaring of gas.⁷³ Over the course of the fracking project, the operator also has to obtain a number of environmental permits from the Environment Agency.⁷⁴ A permit is needed for any of the regulated activities contained in the legislation.⁷⁵ As one might expect, fracking is not specified but would come within the terms of

(Environmental Impact Assessment) (Scotland) Regulations 2011; Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012.

⁶⁹ EIA Directive, art 2(1).

⁷⁰ *ibid* Annex I, para 14.

⁷¹ DCLG, *National Planning Policy Framework* (n 67) para 147; Scottish Government (n 67) para 240; National Assembly for Wales (n 67) para 64.

⁷² Mineral Extracting Industries Directive (EEC) 92/91 [1992] OJ L348/9.

⁷³ Industrial Emissions Directive (EU) 2010/75 [2010] OJ L334/14.

⁷⁴ Or its equivalent in the devolved administrations: Natural Resources Wales; the Scottish Environment Protection Agency; or the Northern Ireland Environment Agency. The environmental permitting regime implements the Integrated Pollution Prevention and Control Directive (EC) 2008/1 [2008] OJ L24/8, plus several other directives on waste and waste-producing activity, eg Mining Waste Directive (EC) 2006/21 [2006] OJ L102/15.

⁷⁵ Environmental Permitting Regulations (England and Wales) 2010, regs 8(1) and 12; Pollution Prevention and Control (Scotland) Regulations 2012 regs 2(1) and 11; Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013 regs 2(1) and 9.

several classes of activity at different stages of the process – including ‘a groundwater activity’ (where there is a risk of discharges into groundwater) and a ‘water discharge activity’ (if surface water run-off becomes polluted, eg due to a spill of flowback fluid) during drilling operations, and ‘a mining waste activity’ at the point of waste disposal.⁷⁶

The fourth, related argument is that existing regulations also deal with a host of different sectoral concerns. Alongside the corpus of environmental legislation are various measures on occupational health and safety. These require an operator, for example, to adopt safe working practices for all ‘borehole operations’⁷⁷ – including drilling for petroleum (again, broadly defined as ‘any mineral oil or relative hydrocarbon and natural gas’⁷⁸). Prior to drilling, the operator must notify the Health and Safety Executive of any hazards, monitoring arrangements and details of the well design to show that it will ‘so far as is reasonably practicable be safe’.⁷⁹ This applies regardless of whether the applicant proposes to drill for conventional or unconventional oil or gas. EU chemicals legislation is also relevant to on-site safety management, even though it does not explicitly deal with fracking.⁸⁰ For instance, an operator in receipt of chemicals used in fracking fluids would fall within the meaning of a ‘downstream user’⁸¹ and therefore be obliged to take appropriate steps to ensure that any risks are properly controlled.⁸² Together, the many legislative regimes across a range of sectors set the bounds of the ‘regulatory domain’. It is because these regimes are technology-neutral,⁸³ and are geared to such broad categories of subject (eg chemicals,

⁷⁶ Environment Agency (EA), *Onshore Oil and Gas Exploratory Operations: Technical Guidance – Consultation Draft* (EA 2013) 6.

⁷⁷ Borehole Sites and Operations Regulations 1995, reg 2(1).

⁷⁸ *ibid* regs 2(2)(a) and (b), and 6(7).

⁷⁹ *ibid* reg 6(1) and sch 1 pt 1.

⁸⁰ Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) Regulation (EC) No 1907/2006 [2006] OJ L396/1.

⁸¹ *ibid* art 3(13): ‘any natural or legal person established within the Community, other than the manufacturer or the importer, who uses a substance, either on its own or in a preparation, in the course of his industrial or professional activities’.

⁸² *ibid* art 37(5).

⁸³ See generally L. Bennett Moses, ‘Recurring Dilemmas: The Law’s Race to Keep Up With Technological Change’ (2007) 2 *University of Illinois Journal of Law, Technology and Policy* 239, 270-276.

petroleum operations, polluting activities) and object (eg safety), that the regulatory domain is so expansive.

Regulatory Continuity

Clearly, there is no shortage of regulation in this area and the breadth of legislative coverage is vast. And given that fracking is seen as functionally equivalent to conventional drilling techniques, there is no break in regulatory continuity. The idea that existing regulation will continue to apply also rests on the argument that the regulation is well-suited to the task of coping with technological advance. What is interesting is that the policy preoccupation with regulatory coverage has a tendency to produce conclusions of regulatory adequacy. For instance, the former Secretary of State for Energy and Climate Change stressed that '[w]e have the regulations, controls and powers of the Environment Agency, the regulations, controls and powers of the Health and Safety Executive and the regulations, controls and powers of my own Department, *so we already have a strong regulatory regime*'.⁸⁴ That is to say, that since the regulations are extensive, they must be held to be efficacious.

No account is taken of the conditions attaching to the various licences and permissions needed for fracking, or of the suitability of specific regulatory requirements given their interpretation and enforcement in practice (eg how do operators ensure that fracking is 'safe' and take 'appropriate steps to control risks?'). It is enough that the conditions and requirements apply; whether or not they are appropriate for regulating fracking remains largely undiscussed. Such deference to existing rules and suppositions of efficacy is, to some degree, built into the regulatory structure. For example, in the planning system, minerals planning authorities are instructed to 'assume that the regulatory regime is appropriate and will operate effectively'.⁸⁵ Similarly, a review

⁸⁴ HC Deb, 13 December 2012, c431, my emphasis. See also DECC, *Guidance: Developing Shale Oil and Gas in the UK* (DECC 2015) para 1.

⁸⁵ HSE, *Shale Gas and Oil Guidance for Planners* (HSE 2015) 1.

of the potential health impacts of shale gas extraction by Public Health England (a division of the Department of Health), was written on the basis that the operations are ‘properly run and regulated’.⁸⁶ The effect is to reinforce the idea of the regulatory domain, and to show a preference for tracing the contours of the regulations instead of subjecting them to a more penetrating analysis. And as ‘coverage’ is treated as the primary indicator of appropriateness in matters of health, safety, and the environment, it seems legitimate to infer that existing regulations make ample provision for fracking – even if fracking is not expressly provided for by statute. The regulations appear as a gapless, timeless set of rules, not unlike the view associated with legal formalism, in that the standards enacted in legislation form a seamless whole and can be mechanically applied to any factual situation.⁸⁷ The lack of specific regulation is of little practical significance because fracking ‘is covered through lots of our existing legislation’.⁸⁸

The repeated emphasis on coverage further means that policymakers have generally been dismissive of the idea of amendment. One example of this comes from the time when the Water Bill (now the Water Act 2014) was going through Parliament. A new clause was inserted into the Bill to introduce a liability guarantee to ensure that fracking companies have funds to pay for clean-up in the event of a polluting accident.⁸⁹ The Member of Parliament who tabled the amendment explained that such a provision was needed because, under existing regulatory arrangements, ‘even if liability for an accident can be proven, there remains a risk that fracking companies will go bankrupt, leaving taxpayers or water companies with a cost’.⁹⁰ This is in contradiction with ‘domain’-based arguments, which hold that there is no need for fracking-specific legislation since existing regulation is adequate. But while the proposed amendment shows that not everyone is

⁸⁶ Public Health England (PHE), *Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process* (PHE 2014) 46.

⁸⁷ I am grateful to John Harrington for discussion on this point.

⁸⁸ Economic Affairs Committee, *Economic Impact on UK Energy Policy of Shale Gas* (n 12) para 228.

⁸⁹ HC Deb 6 January 2014, col 100.

⁹⁰ Water Bill Deb 10 December 2013, col 222.

convinced by assumptions of regulatory adequacy, the response of Government provides yet further evidence of the ‘domain’ at work. Government did not support the amendment, and had it removed from the Bill, because it believed that the ‘existing regulatory framework is fit for purpose for the exploration and exploitation of onshore oil and gas activities’.⁹¹ The then-Parliamentary Under-Secretary of State for Environment, Food and Rural Affairs explained that ‘a great number of checks and controls’ already exist to ‘ensure that operators comply with the requirements of their permits and deal with the wider pollution risks without adding to existing legislation’.⁹²

The practice of resorting to existing legislative coverage gives the ‘regulatory domain’ a sturdiness and panacea-like quality, and leaves little scope for reform in areas where ‘domain’-like arguments are invoked (ie health, safety, and the environment). This is reflected in the words of the Prime Minister, who insists that ‘[w]e have a very tough set of environmental permissions, permits and all the rest of it. I do not think we need to add to that’.⁹³ Yet, not all stakeholders accept so uncritically the appropriateness of existing regulations or the paramountcy of the ‘regulatory domain’, hence Government has been put on the defensive.

Defending Against Reform

The UK Government has maintained its position on regulatory coverage, even in the face of determined opposition. In other jurisdictions, policymakers have been less inclined to look only to the formal reach of regulation and more willing to engage in the sort of ‘adequacy testing’ that the UK has so far avoided. The EU institutions, for instance, have made a more concerted effort to probe into whether existing provisions offer effective protection against fracking-related risks.

⁹¹ *ibid* col 224.

⁹² *ibid*.

⁹³ Liaison Committee, *Evidence from the Prime Minister* (HC 2013-14, 939) Q70.

The European Commission finds that, although EU legislation is *prima facie* applicable to fracking, ‘the interpretation of applicable EU legislation is unclear, while other environmental problems remain unaddressed’.⁹⁴ Here we see a clear separation of questions of coverage and adequacy, and a reluctance on the part of the Commission to treat them as one and the same issue. A similar line of reasoning is followed by the European Parliament, which notes that, notwithstanding the many relevant regulations, it is ‘unclear whether the current regulatory framework of EU legislation provides an adequate guarantee against the risks ... resulting from shale gas activities’.⁹⁵

The European Parliament (particularly its Committee on Environment, Public Health and Food Safety) is especially concerned that even though fracking comes within the definitional scope of many pieces of EU legislation, it may fail to trigger specific obligations in certain Directives and Regulations. The Committee illustrated the problem with reference to the EIA (Environmental Impact Assessment) Directive. Recall that an EIA must be completed for drilling activities if certain criteria are met: under Annex I if the project involves the extraction of more than 500,000 cubic metres of gas per day;⁹⁶ or under Annex II if the project involves deep drilling and is likely to have significant effects on the environment, and is either larger than one hectare or located in a protected area (such as an area of outstanding natural beauty).⁹⁷ The trouble is that it is not obvious that fracking projects would fulfill these criteria as a matter of course. As regards Annex I, shale gas drilling may have little trouble crossing the 500,000 cubic metres per day threshold during stages of full-scale commercial production, but will probably fail to yield such volumes of

⁹⁴ Commission, ‘The Exploration and Production of Hydrocarbons (Such as Shale Gas) Using High Volume Hydraulic Fracturing in the EU’ (Communication) COM (2014) 23 final/2, 27.

⁹⁵ European Parliament, ‘Environmental Impacts of Shale Gas and Shale Oil Extraction Activities’ (Resolution) P7_TA(2012)0443, para 60.

⁹⁶ *ibid* Annex I, para 14.

⁹⁷ *ibid* art 4(2)(b). For explanation, see A. Ryall, *Effective Judicial Protection and the Environmental Impact Assessment Directive in Ireland* (Hart 2009) 127-130.

gas during the exploration phase – and even so, site operators will not know the rate of productivity at the outset. The difficulty with Annex II (as transposed in the UK⁹⁸) is that, provided the project is not located in a protected area, the operator can avoid having to conduct an EIA by proposing works of one hectare or less. This is evident in a number of examples in the UK, where planning applications have been made for sites of up to 0.99 hectares in size.⁹⁹

The European Parliament has said it finds it highly unsatisfactory that fracking sites ‘are not generally subject to an environmental impact assessment *despite the environmental risks of such projects*’.¹⁰⁰ So, when the EIA Directive was reviewed in 2012, the Parliament sought to introduce a requirement that an EIA should be conducted for *all* shale gas activities involving fracking.¹⁰¹ That requirement does not, however, feature in the final version of the Directive, owing to the tactics of a handful of Member States including the UK. Parties to the legislative process were keen to secure a quick agreement by the last plenary session (April 2014) before the European Parliamentary elections (May 2014). To save time, the European Parliament postponed the completion of its first reading and instead entered into informal discussions with the European Council. At the Council, the UK strenuously opposed the introduction of a mandatory EIA and reportedly played ‘a leading part’¹⁰² in the backlash, forming a blocking minority to prevent the adoption of Parliament’s more stringent proposals on shale gas.¹⁰³ This proved successful, and the requirement of a mandatory EIA for fracking activities was removed before the revised Directive was agreed upon.

⁹⁸ Town and Country Planning (Environmental Impact Assessment) Regulations 2011, sch 2(2); Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, sch 2(2); Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012, sch 2(2).

⁹⁹ eg Lancashire County Council, West Lancashire Borough Council: Application No. 08/10/0973; Surrey County Council, Reigate and Banstead Borough Council: Application No. 10/02089/CON.

¹⁰⁰ European Parliament (n 95) para K, my emphasis.

¹⁰¹ European Parliament, ‘Assessment of the Effects of Certain Public and Private Projects on the Environment’ P7_TA(2013)0413, amendment 31.

¹⁰² European Scrutiny Committee, *Forty-first Report* (HC 2013-14, 83-xxxviii) 64.

¹⁰³ European Environmental Bureau (EEB), *The EEB’s Assessment of the Environmental Results of the Lithuanian Presidency of the EU July-December 2013* (EEB 2013) 5.

From this, we see how arguments of broad regulatory coverage are relied on in defence of the regulatory domain. The UK Government (and indeed any Member State) could, if it wished, introduce further requirements for shale gas, above and beyond those contained in the EIA Directive.¹⁰⁴ But it chose instead to use its voting leverage to prevent any such intervention at EU level, and to ensure that the ‘regulatory domain’ remained unchanged. Indeed, Government regards it as a victory in its ‘fight against unnecessary regulation ... from Brussels’¹⁰⁵ that the shale gas-specific amendment was not passed into law.¹⁰⁶ Government’s first ‘Cut EU Red Tape’ report listed 30 priorities, one of which was to ensure that the EU would ‘[r]efrain from bringing forward legislative proposals on shale gas’.¹⁰⁷ The reasons given are familiar: the Directive already covers fracking, and the current regulatory framework is ‘tried and tested’ and ‘well understood by businesses’.¹⁰⁸ This was echoed by former Secretary of State for Communities and Local Government, Eric Pickles, who commented that ‘given the UK’s long-standing domestic environmental safeguards, there really is no need for European legislation in this area’.¹⁰⁹ The fact that the UK was able to resist reform shows just how steadfastly Government has set its face against legislative change, particularly EU legislative change, in this context.

To summarise, the broad, multilevel coverage provided by EU and UK regulations is just one factor in establishing the ‘regulatory domain’. Others include the use of regulatory abstraction and technological analogy, all of which help to give the ‘domain’ both conceptual form (ie as complete and comprehensive) and normative force (ie by offering resistance to reform). None of

¹⁰⁴ TFEU (n 59) art 193.

¹⁰⁵ Better Regulation Executive (BRE), *The Seventh Statement of New Regulation* (Department of Business, Innovation and Skills (BIS) 2013) 2.

¹⁰⁶ BRE, *The Eighth Statement of New Regulation* (BIS 2014) 16; Business Taskforce, *Cut EU Red Tape: One Year On* (BIS 2014) para A1.

¹⁰⁷ Business Taskforce, *Cut EU Red Tape: Report from the Business Taskforce* (BIS 2013) 8.

¹⁰⁸ *ibid* 19.

¹⁰⁹ European Scrutiny Committee (n 102) 64.

these factors or framings is inevitable – they involve strategic choices, interpretive discretion and what sociologists call ‘boundary work’.¹¹⁰

Regulatory Dexterity

So far, the article has looked at how UK policy on the regulation of fracking is the product of Government’s single-minded commitment to the existing regulatory domain and the coverage it affords. Such a focus on coverage has meant that the policy contains little discussion of either the suitability of existing regulations or the manner of their implementation. As a result, Government has shown an unwillingness to consider proposals for legislative reform tabled by UK policy actors¹¹¹ or EU institutions.¹¹² The remainder of the article addresses a subtle but important variation in Government’s approach – one that is at odds with the arguments heard so far.

Although Government’s arguments about regulatory coverage dominate, limited exceptions have been carved out of the domain and set aside for regulatory amendment. Here, Government has singled out parts of the regulatory domain as defective and in need of reform – which is in direct contrast with its unquestioning acceptance of the coverage (and hence adequacy) of existing regulatory arrangements. These regulatory ‘outliers’ are important because they tell a different story. Instead of portraying existing regulations as applicable and robust, Government has moved swiftly to introduce new regulatory measures for fracking, including new items of legislation. So while the ‘regulatory domain’ gives a sense of fixedness, immutability, and abstraction, the approach described now involves greater agility, quick reflexes, and a higher level of precision – hence the term ‘regulatory dexterity’. And whereas the domain rests on techniques of mapping and analogy, and so on, dexterity is driven by its own logics of interpretation, each

¹¹⁰ See eg S. Shackley and B. Wynne, ‘Representing Uncertainty in Global Climate Change Science and Policy: Boundary-Ordering Devices and Authority’ (1996) 21(3) *Science, Technology and Human Values* 275.

¹¹¹ See text to n 88.

¹¹² See text to n 99.

giving force to the idea that the law needs updating. These dexterity-producing interpretations will now be examined as isolated departures from the prevailing image of the regulatory domain. They place great emphasis on technological dissimilarity (not analogy), concrete legal rules (not regulation in the abstract), specific regulatory adequacies (not broad regulatory coverage), and changes to national legislation (not an insistence on the continuity and comprehensiveness of multilevel regulatory regimes).

Technological Dissimilarity

We saw above that one reason for thinking that fracking is adequately dealt with by existing regulations is that it is considered to be analogous to established methods of drilling. There are cases, however, in which that analogy is turned on its head and Government's focus is on the *differences* between fracking and other drilling operations. Unlike arguments that fracking is functionally equivalent to 'conventional' processes of extraction, the emphasis here is on the market-transforming potential of a new supply of shale gas.¹¹³ Whereas, in establishing the 'regulatory domain', Government concentrates on the similarities between fracking and conventional drilling in terms of technological process and categories of risk, arguments of 'regulatory dexterity' are made on the basis that fracking has a substantially different end product, and offers new and remarkable benefits compared with traditional gas production.

The distinction between technological processes and products applies in several areas of law to varying effect.¹¹⁴ In the context of fracking, it is strategically deployed to sustain claims of both 'domain' and 'dexterity'. Fracking may be an 'incrementally' innovative process (which continues to be regulated by existing legislation) but can result in a 'radically' innovative product

¹¹³ HM Treasury, *Harnessing the Potential of the UK's Natural Resources: A Fiscal Regime for Shale Gas* (HM Treasury 2013).

¹¹⁴ See eg D.A. Kysar, 'Preferences for Processes: The Process/Product Distinction and the Regulation of Consumer Choice' (2004) 118(2) *Harvard Law Review* 526.

(which requires new regulation).¹¹⁵ As a technological product, shale gas is described as ‘an exciting new resource’,¹¹⁶ ‘an exciting new prospect for diversifying our energy supplies’,¹¹⁷ and ‘alternative’ to other fossil fuels.¹¹⁸ It is also distinguished in terms of its market impact, as it is said to have ‘the potential to kickstart a whole new industry’.¹¹⁹ Government lays particular stress on the ‘new’ benefits of shale gas, setting it apart from conventional energy sources. The greater the perceived differences, the easier it is to justify a new regulatory approach. A further distinction is drawn in respect of costs, since fracking is expected to involve a high initial outlay and longer periods of unprofitability than conventional onshore and even offshore oil and gas projects.¹²⁰ All of these distinguishing features (new product, new benefits, new costs) help to separate shale gas fracking from other types of extractive activity for regulatory purposes, and it is by creating some conceptual distance that the prospect of fracking-specific reform begins to materialise.

Concrete Legal Rules and their Inadequacies

As well as focusing on technological difference, Government provides concrete examples of inadequacies in existing regulation. Instead of viewing the regulation as an integrated, complete whole, Government now points to individual points of regulatory weakness. This is in stark contrast with its approach under the ‘regulatory domain’. Rather than evaluate the regulations in terms of their broad, multilevel coverage, Government now focuses on whether specific parts of the regulation interfere with the UK’s development of fracking. This involves singling out

¹¹⁵ See text to n 53.

¹¹⁶ HM Treasury, *Harnessing the Potential of the UK’s Natural Resources* (n 113) para 0.2.

¹¹⁷ DECC, ‘Gas Will Support Decarbonisation of the Electricity Mix’ <https://www.gov.uk/government/news/gas-will-support-decarbonisation-of-the-electricity-mix> accessed 9 March 2016.

¹¹⁸ DECC, ‘Shale Gas – An Inconvenient Truth for the Anti-Fracking Lobby’ <https://decc.blog.gov.uk/2015/09/23/shale-gas-an-inconvenient-truth-for-the-anti-fracking-lobby/> accessed 10 March 2016.

¹¹⁹ DECC, Michael Fallon and Edward Davey, ‘Getting Ready for Shale Gas – Supply Chain Estimated to be Worth Billions as New Environmental Measures Announced’ (24 April 2014) <https://www.gov.uk/government/news/getting-ready-for-shale-gas-supply-chain-estimated-to-be-worth-billions-as-new-environmental-measures-announced> accessed 10 October 2015.

¹²⁰ HM Revenue and Customs (HMRC), *UK Oil and Gas Fiscal Regime: Extension of the Ring Fence Expenditure Supplement for Onshore Activities* (HMRC 2013) paras 76-77.

particular rules and regulations that raise obstacles to such development. Certain regulatory procedures are regarded as unnecessarily cumbersome and as imposing an unreasonable restraints on the shale gas industry.¹²¹ Life peer and former Chancellor, Lord Lawson, asks:

is it not shameful that so far there has been only one exploratory well drilled in this country and that the industry is clear that the reason for the snail's pace of progress is the mind-boggling bureaucratic complexity of the regulatory system in this country?¹²²

Specific aspects of the regulatory system to attract Government criticism include the planning regime, which is apparently susceptible to 'slow and confused decision making amongst councils'.¹²³ In a joint statement, DECC and DCLG cautioned that '[i]f planning applications for shale exploration developments take months or even years it can create uncertainty for communities and prevent the development of a potentially vital national industry'.¹²⁴ The law on access to land has also been criticised for imposing unduly burdensome obligations on fracking companies and creating a disincentive to investment in shale gas projects in the UK. Until recently, land access in this context was governed by trespass law. In order to avoid committing an actionable trespass, a company wishing to drill beneath land belonging to another first had to seek permission from the landowner or tenant.¹²⁵ As fracking involves horizontal drilling for several hundreds if not thousands of metres, the company might have needed the agreement of a large number of individuals. Government felt that it would be impractical to have to identify all relevant

¹²¹ eg HL Deb 26 March 2014, col 536; HL Deb 27 March 2014, col 604; Economic Affairs Committee, *Economic Impact on UK Energy Policy of Shale Gas* (n 12), para 258.

¹²² HL Deb 26 March 2014, col 536.

¹²³ DECC and DCLG, 'Faster Decision Making on Shale Gas for Economic Growth and Energy Security' (13 August 2015) <https://www.gov.uk/government/news/faster-decision-making-on-shale-gas-for-economic-growth-and-energy-security> accessed 24 August 2015.

¹²⁴ *ibid.*

¹²⁵ *Bocardo SA v Star Energy UK Onshore Ltd and another* [2011] 1 AC 380, esp 391-401.

landholders, noting that this ‘can require significant time and resources’,¹²⁶ especially in cases involving land with unregistered title. Moreover, under trespass law, a single landholder was able to obstruct fracking development simply by withholding permission. Where a landholder unreasonably refused to grant access or demanded unreasonable terms for its grant, the shale gas company may have been entitled to apply to the court for the compulsory acquisition of ancillary rights over (or under) land pursuant to the Mines (Working Facilities and Support) Act 1966.¹²⁷ This is known to be a lengthy and costly process, however, and so Government did not want gas companies routinely having to resort to the 1966 Act.¹²⁸

To overcome problems of uncertainty, expense, and delay, Government has adopted several new initiatives to expedite the regulatory process for shale gas operations. These include guidance for minerals planning authorities on how shale gas applications should proceed through the planning system,¹²⁹ and policies giving the Secretary of State the additional power to ‘call-in’ a planning application and ‘recover’ a planning appeal for his own determination.¹³⁰ The use of revisable guidance and standards of practice ensures that the content of existing regulation remains the same but its application is updated to reflect the changing technological circumstances. In this regard, ‘regulatory dexterity’ has a role to play in preserving the stability of ‘regulatory domain’ – by leaving the substantive rules untouched and making new arrangements for implementation.

‘Dexterity’ has also been used, however, to replace certain substantive rules entirely. Government has enacted new legislation in areas of finance, planning permission, and land access, with the aim of removing obstacles to shale gas development. It is vital to note that the previous

¹²⁶ DECC, *Underground Drilling Access: Consultation on Proposal for Underground Access for the Extraction of Gas, Oil or Geothermal Energy* (DECC 2014) 20.

¹²⁷ Mines (Working Facilities and Support) Act 1966, s 3.

¹²⁸ DECC, *Underground Drilling Access: Consultation* (n 126) 4; DECC, *Underground Drilling Access: Government Response to the Consultation on Proposal for Underground Access for the Extraction of Gas, Oil or Geothermal Energy* (DECC 2014) para 1.26.

¹²⁹ DCLG, *Planning Practice Guidance* (n 34).

¹³⁰ DECC and DCLG, *Shale Gas and Oil Policy Statement by DECC and DCLG* (DECC and DCLG 2015) para 5.

law in these areas would have covered fracking – it is not as though Government was seeking to fill gaps in legal provision. For example, the Mines (Working Facilities and Support) Act 1966 already offered a regime whereby operators could gain access to, or under, the land of another. Likewise, the planning system already dealt with applications for development involving the onshore extraction of oil and gas – remember that the UK has ‘a strong track record’ and ‘over 50 years of experience’ behind it.¹³¹ Similarly, oil and gas development was already subject to several types of tax.¹³² Government could conceivably have regarded these measures as coming within the ‘regulatory domain’ and as continuing to apply without modification. On the issue of fracking, however, it construes existing regulation on finance, planning permission, and land access as both inadequate and requiring a complete overhaul. The UK is, of course, free to legislate in these areas because EU Member States retain competence to determine their own national energy mix.¹³³ In the following examples, the UK has used its national competence to introduce technology-specific legislation to increase the speed and scale at which fracking takes place. They are, in other words, illustrations of ‘regulatory dexterity’ in action.

New Fracking-Specific Legislation

The first example of ‘regulatory dexterity’ is the newly established tax regime for shale gas activities, described by the Chancellor as ‘the most generous for shale in the world’.¹³⁴ The Finance Act 2014 introduces an ‘onshore allowance’ to support the development of shale gas projects that are economic but not commercially viable under the usual tax arrangements.¹³⁵ Prior to the Act, profits from oil and gas extraction were taxed at a rate of 62% (30% corporation tax plus a 32%

¹³¹ See text to n 56.

¹³² HM Treasury, *Consultation Outcome – Review of the Oil and Gas Fiscal Regime: Call for Evidence* (HM Treasury 2014) para 2.1.

¹³³ See text to n 58.

¹³⁴ HM Treasury and DCLG, ‘Shale Gas: Government Unveils Plan to Kick Start Investment with Generous New Tax Breaks’ (19 July 2013) <https://www.gov.uk/government/news/shale-gas-government-unveils-plan-to-kick-start-investment-with-generous-new-tax-breaks> accessed 12 March 2016.

¹³⁵ HM Treasury, *Budget 2013* (n 36) para 1.93.

supplementary charge). The new onshore allowance exempts a portion of those profits from the supplementary charge, resulting in an effective tax rate of just 30%.¹³⁶ The Finance Act 2014 also extends the ring fence expenditure supplement to protect companies embarking on shale gas projects from high start-up costs and an initial period of likely unprofitability. Previously, the supplement allowed onshore oil and gas companies to uplift their losses by 10% for up to six accounting periods, in order to maintain their value until they could be offset against future profits.¹³⁷ The Act extends the number of claims available to onshore oil and gas companies to ten accounting periods, allowing them to maintain the value of their losses for longer.¹³⁸ Furthermore, new Business Rates Retention legislation in England means that local authorities will be able to keep 100% (rather than the standard 50%) of the business rates collected from shale oil and gas sites.¹³⁹ Such fiscal measures aim to make the UK ‘an attractive, competitive opportunity for global operators’¹⁴⁰ and to create the right economic conditions for the shale industry to flourish.

Secondly, Government hastily introduced two instruments of secondary legislation to lessen the burden of the planning process. The first of these removes the obligation on fracking operators to notify individual owners or tenants to whose land the planning application relates.¹⁴¹ The second effectively reduces the planning application fee for development involving fracking.¹⁴² In its race to introduce these changes, however, Government allowed only limited opportunity for Parliamentary scrutiny. Although the statutory instruments were subject to different procedural

¹³⁶ Finance Act 2014, s 70 and sch 15.

¹³⁷ Corporation Tax Act 2010, ss 307-329.

¹³⁸ Finance Act 2014, s 69.

¹³⁹ Non-Domestic Rating (Shale Oil and Gas and Miscellaneous Amendments) Regulations 2015.

¹⁴⁰ HM Treasury, *Autumn Statement 2013* (Cm 8747, 2013) para 1.180.

¹⁴¹ Town and Country Planning (Development Management Procedure and Section 62A Applications) (England) (Amendment No. 2) Order 2013, SI 2013/3194, art 2(4)(b).

¹⁴² Town and Country Planning (Fees for Applications, Deemed Applications, Requests and Site Visits) (England) (Amendment) Regulations 2014, SI 2014/357, art 2(2)(b).

requirements,¹⁴³ neither received the level or quality of scrutiny that could reasonably have been expected.¹⁴⁴ The *Consultation Principles* at that time stated that, while there is ‘no set formula’ for establishing the right length of a consultation, ‘[f]or a new and contentious policy, 12 weeks or more may still be appropriate’.¹⁴⁵ In this case, the statutory instruments were out for consultation for only half that time. The House of Lords’ Secondary Legislative Scrutiny Committee noted that fracking ‘might very well be seen as a new and contentious policy’ and found it ‘hard to imagine what policy considerations [if not fracking] might lead them to allow 12 weeks or longer for a consultation’.¹⁴⁶ The timing of events also meant that the first instrument was not debated in Parliament,¹⁴⁷ which was not technically a breach of procedural requirements, but the House of Lords’ Committee nevertheless found it ‘regrettable that the opportunity for Parliamentary scrutiny was curtailed in this way’.¹⁴⁸ Moreover, there was no regulatory impact assessment accompanying the second instrument when it was laid before Parliament,¹⁴⁹ leading the House of Lords’ Committee to conclude that it was ‘not persuaded that the Department [for Communities and Local Government] has adequately thought through its policy implementation’.¹⁵⁰ Not only does this show the sense of urgency around reform, but it also suggests that ‘regulatory dexterity’ can come at the price of due process.

The third, most recent example of legislative change is the Infrastructure Act 2015. Before going further, it is worth pausing to reflect on the Act’s evolution. When introduced to the House of Lords in Bill form, it contained a hotchpotch of provisions to support Government’s proposals

¹⁴³ The first instrument was introduced using the negative procedure, and the second using the affirmative procedure.

¹⁴⁴ Secondary Legislation Scrutiny Committee, *Twenty Eighth Report* (HL 2013-14, 124).

¹⁴⁵ Cabinet Office, *Consultation Principles* (Cabinet Office 2013) 2.

¹⁴⁶ Secondary Legislation Scrutiny Committee (n 144) para 6.

¹⁴⁷ Made on 17 December 2013 (two days before the Christmas Recess); laid before Parliament on 20 December 2013 (during the Christmas Recess); in force on 13 January 2014 (one week after the end of the Christmas Recess).

¹⁴⁸ *ibid* para 4.

¹⁴⁹ The impact assessment was published just over a month after the instrument was laid before Parliament: DCLG, *Changes to Town and Country Planning (Development Management Procedure) (England) Order 2010 for Onshore Oil and Gas Extraction* (DCLG 2014).

¹⁵⁰ *ibid* para 12.

to plan, fund, manage, and maintain the UK's national infrastructure. These included requirements relating to the management of strategic roads in England, and the control of invasive non-native species of plant, but the Bill was initially silent on the subject of fracking. Provisions on fracking were later inserted, showing how the Bill came to be opportunistically repurposed in part for deep, horizontal drilling. Of the several fracking-specific provisions now contained in the Act,¹⁵¹ the most controversial is the new land access regime for shale gas developers. Government was concerned that the slow pace of shale gas development was due in part to the difficult and protracted process of obtaining either the agreement of all relevant landholders or ancillary rights under the Mines (Working Facilities and Support) 1966 Act, as discussed above. To remedy the situation, the Infrastructure Act 2015 creates a new 'right to use deep-level land',¹⁵² meaning that operators wishing to drill for shale gas in another party's land now have an automatic right of access. There are restrictions on the right – for example, it cannot be exercised at depths of less than 300 metres below the surface, or in 'protected areas' at depths of less than 1,200 metres.¹⁵³ But given that fracking is expected to take place two to three kilometres underground, these restrictions are likely to have little practical effect.¹⁵⁴ The important point is that, in this setting, the rules of trespass and of compulsory rights under the 1966 Act have become redundant, which should make it quicker and simpler for shale gas companies to proceed with development. That is, after all, the main reason for Government's selective approach to streamlining the law.

Domain and Dexterity Together

Having established that the UK Government relies on two different types of regulatory strategy, the article now turns to consider their significance *together* rather than as separate phenomena.

¹⁵¹ Infrastructure Act 2015, ss 45-47 and 50.

¹⁵² Infrastructure Act 2015, ss 43-44; applicable in England and Wales only, s 56(6)(c).

¹⁵³ Onshore Hydraulic Fracturing (Protected Areas) Regulations 2016, regs 2 and 3. See also Infrastructure Act 2015, s 50.

¹⁵⁴ Although the Act precludes the drilling of wells at the surface in specified protected areas, it does not prevent deep horizontal drilling ($\geq 1,200$ metres) beneath protected areas provided that the rigs are located outside the perimeter.

What is interesting but little noticed is that the UK Government deploys arguments of ‘regulatory domain’ and ‘regulatory dexterity’ simultaneously. This throws important new light on how divergent regulatory tactics are used in tandem, for although ‘domain’ and ‘dexterity’ retain their differences (eg abstract/concrete, continuity/change, and so forth), they also depend on each other for meaning and effect. What remains is to demonstrate how they interrelate.

First, ‘regulatory domain’ and ‘regulatory dexterity’ provide a justificatory basis for each other. One reason for invoking ‘dexterity’, for example, is that it is underpinned by an ostensibly sound and solid ‘domain’. Government argues that legislation should be reformed to encourage fracking not only because shale gas offers a cheaper, cleaner, and more secure energy supply, but also because robust controls are already in place to protect the environment and ensure safe operation. In assessing the need for underground access rights for shale gas operators (later enacted in the Infrastructure Act 2015), DECC found that ‘[s]ince ... broader issues of concern about the environmental and other impacts of the proposed activities are fully addressed through planning and other regulatory frameworks, there is a case for changing the statutory framework to provide for underground access without the complexity and expense of the existing procedure’.¹⁵⁵ This gives a sense of how arguments of ‘regulatory domain’ (drawing on the UK’s long experience of oil and gas extraction, and its comprehensive regulation of health and the environment) give powerful impetus to activities of ‘regulatory dexterity’ (such as reforms of financial regulation and trespass law).¹⁵⁶ In other words, ‘domain’ proves to be an important discursive resource for the promotion of ‘dexterity’.

¹⁵⁵ DECC, *Underground Access Rights Clauses in 2014 Infrastructure Bill – Impact on Oil and Gas Activities* (DECC 2014) 5-6.

¹⁵⁶ See also HM Treasury, *Harnessing the Potential of the UK’s Natural Resources* (n 113) para 6; Infrastructure Bill Deb 14 October 2014, col GC59; Draft Onshore Hydraulic Fracturing (Protected Areas) Regulations 2015 Deb 27 October 2015, col 3-4.

Secondly, ‘regulatory domain’ and ‘regulatory dexterity’ help to shield each other from criticism. Concerns that law is too slow or too general to deal with fracking are allayed by reference to speedily introduced fracking-specific legislation.¹⁵⁷ Conversely, criticisms that the legislation was too hastily conceived or is too narrowly circumscribed are dismissed by reason of law’s stable and widely applicable character.¹⁵⁸ This means that the regulation of fracking is fixed and all-embracing (‘domain’) *as well as* flexible and specifically targeted (‘dexterity’). It also means that regulatory arguments are ‘flattened’ into a single plane, so that there is a great deal of toing and froing between ‘regulatory domain’ and ‘regulatory dexterity’ but no attempt to take the discussion in other directions.¹⁵⁹ Issues such as public participation in decisions relating to fracking and the human rights implications of shale gas extraction are conspicuously absent from governmental debate, as they fall outside the language of current discussions.¹⁶⁰ There is accordingly little incentive to consider arguments beyond ‘domain’ and ‘dexterity’, because together ‘domain’ and ‘dexterity’ form the regulatory whole – or, to use Patricia Ewick and Susan S. Silbey’s phrase, the ‘hegemonic conception of law’.¹⁶¹ ‘Regulatory dexterity’ makes up for the failure of the ‘regulatory domain’ to move with the technological times; ‘regulatory domain’ compensates for acts of ‘regulatory dexterity’ rushed through the legislative process. Each works to divert attention from the other’s weaknesses, thereby deflecting criticism and maintaining the pretence of order and good government. It is through these two responses, and the opposition between them, that fracking regulation becomes difficult to contest on grounds which are not in some way answerable by ‘domain’ or ‘dexterity’. The lesson is that, although ‘domain’ and ‘dexterity’ express two distinct approaches to regulation – one based on conventions of abstraction, analogy, coverage, continuity, and resistance to reform and the other on concreteness, dissimilarity, inadequacy, change and new

¹⁵⁷ eg HM Government, *Government Response to the House of Lords Economic Affairs Select Committee Report: “The Economic Impact on UK Energy Policy of Shale Gas and Oil”* (HM Government 2014) paras 6-9.

¹⁵⁸ Regulatory Policy Committee (RPC), *Defining Protected Areas – Hydraulic Fracturing* (RPC 2015) 2.

¹⁵⁹ See also Pedersen (n 40).

¹⁶⁰ For fuller consideration, see Hilson (n 39); A. Gear et al, *A Human Rights Assessment of Hydraulic Fracturing in the UK* (Global Network for the Study of Human Rights and the Environment 2014).

¹⁶¹ Ewick and Silbey (n 6) 231.

regulation – they are complementary inasmuch as they strengthen each other’s influence and authority.

Lastly, and related to this, ‘regulatory domain’ and ‘regulatory dexterity’ both operate to the same end; that is to say, both are employed to advance the development of the UK’s fracking industry. Clearly, Government wants to have a foot in both camps when it suits its policy objectives. Here we see how ‘domain’ and ‘dexterity’ work in conjunction with each other, not just as descriptive accounts of regulation but by seeking to bring certain technological realities into being. Together they have a projective and ‘performative’ effect. ‘Domain’ and ‘dexterity’ act in concert to facilitate shale gas development in the UK – by resisting the introduction of fracking-specific legislation where it threatens to impede technological progress (‘domain’), and by pressing for legislative reform designed to streamline the regulatory process for fracking (‘dexterity’). They depict fracking both as equivalent to conventional drilling that is already comprehensively regulated (‘domain’) and as involving such transformative change that it requires a dedicated regulatory regime (‘dexterity’). Both depictions play a role in legitimating the UK’s pro-fracking policy, by normalising fracking (‘an established technology’¹⁶²) as well as claiming its novelty (an ‘exciting new prospect new’¹⁶³). Legal interpretation, therefore, can impact significantly on the nature and viability of particular technological choices – law is not a neutral arbiter of technological outcomes, since ‘domain’ and ‘dexterity’ promote a particular technological trajectory as though there are no sound alternatives.¹⁶⁴ Their straightjacketing effect needs to be subject to critical scrutiny. By attempting to understand the different, sometimes conflicting, styles of argument and courses of action in regulating one particular technology, this article takes a small but important step in that direction.

¹⁶² See text to n 53.

¹⁶³ See text to n 115.

¹⁶⁴ Similarly see J. Wilsdon, B. Wynne and J. Stilgoe, *The Public Value of Science* (Demos 2005) 26.

Conclusion

The UK Government's regulatory response to fracking showcases some of the many ways in which law relates to technology. A critical analysis of Government's strategy and actions reveals two distinct regulatory schemas – 'regulatory domain' and 'regulatory dexterity' – each relying on different interpretive conventions and different methods of approaching regulation. Arguments of 'regulatory domain' reflect the understanding that, because fracking is already covered by existing regulation, it does not warrant further legislation. Such arguments position regulation in its totality, abstracting general principles of regulation to convey a sense of comprehensiveness and control. From this perspective, fracking is seen as analogous to established drilling methods and therefore subject to the same legislative requirements. Given that regulatory coverage is broad and exists at both EU and UK levels, it is assumed to afford adequate protection against the potential health and environmental risks. Owing to the already robust regulatory framework, Government has rejected proposals for reform.

Whereas the regulatory domain (covering health, safety, and the environment) develops an untouchable quality, other issues – in this instance, finance, planning permission, and land access – are open to revaluation. This second approach, referred to here as 'regulatory dexterity', conceives of fracking as dissimilar from conventional drilling methods and in need of targeted regulatory reform. It switches the emphasis from the question of regulatory coverage to that of overcoming concrete regulatory inadequacies. In order to reduce the apparent uncertainty, delay and expense associated with the regulatory system – which, curiously enough, are treated as problems for fracking but not for other types of technological development – Government has introduced several measures of fracking-specific regulation through the passage of new legislation.

It is worth bearing in mind that, even if they seem to be inevitable ways of 'doing' regulation, neither 'domain' nor 'dexterity' emerges of its own accord. Each involves taking a clear

interpretive stance on issues like the novelty of fracking and the sufficiency of existing regulatory provision. Moreover, the dividing line between ‘domain’ and ‘dexterity’ is not fixed but varies depending on how each schema may be used to enable fracking to develop. It just so happens that the rules on finance, planning permission, and land access are the selected targets of regulatory dexterity – but they could easily have been construed as parts of the regulatory domain, had their reform not raised the prospect of a more fracking-friendly regulatory environment. So ‘domain’ and ‘dexterity’ do not come prepackaged but are open to strategic interpretation. Crucially, what at first sight appear to be inconsistent approaches to regulation turn out to have a close affinity with each other. Despite the fact that ‘domain’ and ‘dexterity’ produce diverse combinations of slow and fast, old and new, sameness and difference, stasis and change, both are used to achieve the same technological result. Their oppositional qualities strengthen and legitimise the case for fracking by ensuring that the regulation is both stable and responsive, both long-standing and up to date, both general and specific. The implications of regulation purporting to be all things at all times, and the normative pull of ‘domain’ and ‘dexterity’ towards a particular technological end, deserve closer attention than they have recently found. This article ‘drills deeper’ into the tactical uses of regulation when faced with a seemingly unmissable technological opportunity.